

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

First Inventor

Title

Express Mail Label No.

Eli Gershenzon

APPLICATION ELEMENTS

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

See MPEP chapter 600 concerning utility patent application contents:

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☒ Specification [Total Pages **36**]
(preferred arrangement set forth below)
- Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **7**]
5. Oath or Declaration [Total Pages **1**]
- a. ☐ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 18 completed)
- i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

7. ☐ CD-ROM or CD-R in duplicate, large table or
Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
- a. ☐ Computer Readable Form (CRF)
- b. Specification Sequence Listing on:
- i. ☐ CD-ROM or CD-R (2 copies); or
- ii. ☐ paper
- c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement of Power of Attorney
(when there is an assignee)
11. ☐ English Translation Document (if applicable)
12. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Nonpublication Request under 35 U.S.C. 122
(b)(2)(B)(i). Applicant must attach form PTO/SB/35
or its equivalent.
17. ☐ Other: **Certificate of Mailing**

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)

of prior application No.: _____

Prior application information:

Examiner _____

Group Art Unit: _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label

Insert Customer No. or Attach Bar Code Label Here

or ☒ Correspondence address below

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Registration No. (Attorney/Agent)

Signature

Boris Kesil

Date

Oct. 10/03

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)

Compleat if Known

Application Number	
Filing Date	
First Named Inventor	Elik Gershenzon
Examiner Name	
Art Unit	
Attorney Docket No.	

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit
Account
Number
Deposit
Account
Name

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Credit any overpayments

☐ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	385 ⁰⁰
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1) (\$)			

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
47	-20** = 27	9	243
Independent Claims	-3** =		0
Multiple Dependent			

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2) (\$)		

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for <i>ex parte</i> reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	40
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	
Other fee (specify)			
*Reduced by Basic Filing Fee Paid			
SUBTOTAL (3) (\$)			668 ⁰⁰

SUBMITTED BY

(Complete if applicable)

Name (Print/Type)	BORIS Kesig	Registration No.		Telephone	468-727-8955
Signature	Boris Kesig	(Attorney/Agent)		Date	Oct -10/03

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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CERTIFICATE OF MAILING

I hereby certify that this correspondence (Patent Application of Elik Gershenzon, et al. ,
for APPARATUS AND METHOD FOR MULTIPLE IDENTICAL CONTINUOUS
RECORDS OF CHARACTERISTICS ON THE SURFACE OF AN OBJECT AFTER
SELECTED STAGES OF MANUFACTURE AND TREATMENT with appropriate
filing documents) will be deposited with the United States Postal Service by First Class
Mail, postage prepaid, in an envelope addressed to "Commissioner for Patents,
Washington, P.O. Box 1450, Alexandria, VA 22313-1450" on the date below:

Date:

Signature:

10.27.2003

Boris Kesil

Boris Kesil

In the United States Patent and Trademark Office

Serial No. _____

Appn. Filed : _____

Applicant: Elik Gershenzon, Boris Kesil, Leonid Velikov, and Yuri Vorobyev

Appn. Title: APPARATUS AND METHOD FOR MULTIPLE IDENTICAL
CONTINUOUS RECORDS OF CHARACTERISTICS ON THE SURFACE OF AN
OBJECT AFTER SELECTED STAGES OF MANUFACTURE AND TREATMENT

Examiner/GAU: _____

Mailed: 10.27.2003

At: San Carlos, CA

Information Disclosure Statement

Commissioner for Patents

P.O.Box 1450

Alexandria, VA 22313-1450

Sir:

Attached is a completed Form PTO-1449 and copies of the pertinent parts of the references cited thereon. Following are comments on references pursuant to Rule 98:

U.S. Patent No. 6,473,664 issued to Lee, et al. in 2002 discloses a manufacturing process automation system using a file server and its control

method. In the proposed automation system, a plurality of machines is connected to a file server via a network, and the job result data produced by the machines are shared by the file server. The job result data processed from a machine (for example, a tester) are stored in the file server. Another machine (for example, a repairer) can execute a job by using the above job result data. However, even if all the controlled parameters are maintained within the allowable tolerances, the occurrence of the failure is not completely excluded. Such defects may be caused either by deviations of parameters, which are not controlled, or by synergistically caused unfavorable conditions that may occur in the production processes. Furthermore, the parameters are measured by a plurality of strictly specialized devices intended for measuring a specific characteristic such as resistance, film thickness, etc.

U.S. Patent Application No. 434,625 filed by B. Kesil, et al. on 05.12.03 shows a measurement apparatus based on the use of RST (Resonance Sensor Technology) principles, wherein the apparatus has a spindle for rotatingly installing a disk, e.g., a semiconductor wafer, and a cantilever beam attached to the apparatus housing for supporting a carriage with a resonance sensor for radially displacing the sensor above the surface of the wafer. However, the application does not teach the use of rotation and radial movements for any other purposes. The apparatus is intended for discrete measurement of characteristics and thickness of thin films and coatings in selected points on the surface of the object being measured.

U.S. Patent No. 6,593,738 issued on July 15, 2003 to Boris Kesil, et al. discloses an apparatus and method for thin film diagnostics and includes an example of the setup design for precision measurements using conventional (inductive, Eddy current) and capacitive sensors. A disadvantage of the sensor of the aforementioned patent is that it is very sensitive to variations in the distance

between the sensor and the film. This requirement dictates the use of expensive and complicated distance-measurement and distance control means such as micro interferometers or microscopes and piezoactuators:

U.S. Patent Application No.359,378 filed by Boris Kesil, et al. on February 07, 2003 describes the principles of RST and discloses the construction of a basic RST sensor. The invention is based on the principle that the inductive coil of the sensor, active resistance of the coil winding, capacitance of the inductive coil (or a separate capacitor built into the sensor's circuit), and the aforementioned AC generator form an oscillating circuit in which electromagnetic oscillations are excited by the aforementioned AC generator. However, in the apparatus of U.S. Patent Application No. 359,378, the method and system for stabilization of the distance between the sensor and the surface of the film being measured remain the same as in first-mentioned U.S. Patent No. 6,593,738, and this feature limits significant potentials of the new method and system.

U.S. Patent Application No. 10/386,648 filed by the same applicants (Boris Kesil, et al.) as the previous application on March 13, 2003 is aimed at a further improvement of properties disclosed in aforementioned U.S. Patent Application No. 359,378 . This new apparatus allows highly accurate and efficient contactless measurement of film thicknesses below 1000 Angstroms by means of a microwave resonance sensor. However, since this resonator is a three-dimensional or a special device, the measurement surface may have the minimum value on the order of several square millimeters. In such a construction, the diameter of the probe practically cannot be reduced beyond the limit of a few square millimeters. In other words, even though the microwave resonance sensor of the type described in U.S. Patent Application No. 10/386,648 is extremely accurate with regard to stabilization of the sensor-object distance, it has limitations with regard to the lateral measurement accuracy.

U.S. Patent Application No..... filed by the same applicants on discloses an apparatus for measuring characteristics and thickness of films and thin coatings comprising a portable hand-held sensor with an external source of the modulated carrier signals located remotely from the portable hand-held sensor unit. The apparatus is suitable for measuring characteristics and thickness of films and coatings directly on objects in selected measurement points with accuracy suitable for use in the semiconductor production. However, neither the last mentioned apparatuses nor any other apparatus or method known to the applicants are suitable for multiple identical continuous measurement of characteristics of semiconductor wafers or similar products after all or selected stages of the manufacture thereof with the use of a generalized or universal sensor unit, which is based on the principles of the resonance sensor technology (RST) and can produce results of measurement in the form of a certain constantly recorded relative value.

Thus none of the references mentioned above discloses, as claimed in our independent Claim 1 with dependent Claims 2-43, an apparatus suitable for multiple identical continuous measurement of characteristics of semiconductor wafers or similar products after all or selected stages of the manufacture thereof with the use of a generalized or universal sensor unit, which is based on the principles of the resonance sensor technology (RST) and can produce results of measurement in the form of a certain constantly recorded relative value.

Furthermore, none of the references mentioned above discloses, as claimed in our independent Claim 44 with dependent Claims 45-47, a method for multiple identical continuous records of characteristics on the surface of an object after selected stages of manufacture and treatment with initiation of all measurements each time from the same point of the object for accumulation of data that


characterize changes that occur in each current point of the object on various stages of manufacture or treatment.

Respectfully,
Applicants

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